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# Memorandum

To: Colorado 208 Commission

From: The Lewin Group

Date: July 14, 2007

Re: **Possible Revenue Sources**

This memo describes the methodology used to estimate various revenue sources proposed for the health care reform plans. This includes changes to certain tax provisions, as well as the use of different payment rates for prescription drugs and Medicaid managed care.

## Cigarette Tax

Currently, the tax per pack of cigarettes in Colorado is $0.84 per pack. An author proposed increasing the tax to $2.00 per pack. In ***Exhibit 1***, we display the estimated increase in revenue associated with such a tax increase - $210.6 million for FY 2007-2008. We assume that the average pack of cigarettes in the State of Colorado is currently $4.13, which includes the current tax of $0.84.[1]

According to monthly estimates by the Colorado Department of Revenue there were 220,865,760 packs of cigarettes that were charged the $0.84 tax in FY 2006-2007. We trend this number forward using the projected growth in cigarette tax revenue from FY 2006-2007 to FY 2007-2008 reported in the June 2007 Revenue Forecast by the Office of State Planning and Budgeting (OSPB).[2] Our estimate of FY 2007-2008 packs is 214,272,752. We apply the current tax rate to the number of packs to estimate tax revenue under current law, which amounts to approximately $180.0 million.

Applying a $2.00 tax increases the average price of cigarettes in Colorado by 28.1 percent to $5.29 per pack. Studies have shown that increases in the price of cigarettes will decrease the demand for cigarettes. According to estimates reported in Farelly et al., the price elasticity of demand for cigarettes ranges from -0.30 to -0.33.[3] We use the midpoint of that range, -0.315 for our estimates. Therefore, for every 1.0 percent increase in price, we estimate a 0.315 percent

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1 Ann Boonn, July 1, 2007. *Campaign for Tobacco-Free Kids, State Cigarette Prices, Taxes, and Costs per Pack.* Available as of July 8, 2007 at http://tobaccofreekids.org/reports/prices.

2 The growth rate was -3.0 percent. The report was available as of July 8, 2007 at http://www.state.co.us/gov_dir/govnr_dir/ospb/economics/cep/2007/cep2007-06.pdf.

3 Farrelly, M.C. et al. 2003. The impact of tobacco control program expenditures on aggregate cigarette sales: 1981-2000. *Journal of Health Economics*, 22: 843-859.

decrease in the demand for cigarettes. This leads to an 8.85 percent decrease in the number of packs that are taxed in FY 2007-2008. We apply the proposed $2.00 tax to the estimated number of packs under the proposed tax scenario, 195,315,061, and obtain an estimate of $390.6 million in total cigarette tax revenue. This amounts to an estimated $210.6 million in additional cigarette tax revenue.

**Exhibit 1.**
**FY 2007-2008 Estimate of Additional Revenue from Cigarette Tax Increase**

| | |
|---|---|
| **Status Quo - $0.84 per pack** | |
| Average Price per Pack | $4.13 |
| Packs | 214,272,752 |
| Cigarette Tax Revenue | $179,989,112 |
| **Proposed Tax - $2.00 per pack** | |
| New Average Price per Pack | $5.29 |
| Percent Increase Price per Pack | 28.09% |
| Price Elasticity of Demand for Cigarettes | -0.315 |
| Percentage Decrease in Utilization | -8.85% |
| Packs | 195,315,061 |
| Cigarette Tax Revenue | $390,630,123 |
| **Additional Tax Revenue** | $210,641,011 |

Source: Lewin Estimates

**Alcohol Tax**

In order to estimate an increase in the tax of beer, wine and spirits, we use one author's suggested increases in tax rates, which were as follows:

- Spirits: from $0.6026 to $5.63 per liter
- Wine: from $0.073 to $0.66 per liter
- Beer: from $0.08 to $0.26 per gallon

***Exhibit 2*** displays our estimates for the increases in beer, wine and spirit taxes. We begin with the FY 2006-2007 tax collections for beer, wine and spirits reported by the Colorado Department of Revenue and calculate implied utilization statistics by dividing the total tax collections by the corresponding current tax rate. Note that beer utilization is in gallons and wine and spirits are in liters. The taxes are applied similarly; that is, the beer tax is per gallon while the wine and spirit tax is per liter.

As with the cigarette tax, we take into account the offsetting effect of reduced demand due to price increases. We use elasticity estimates of -0.3, -1.0 and -1.5 for beer, wine and spirits respectively, which are based on estimates reported in Chaloupka et al.[4] We estimate the current average price for one gallon of beer and one liter of wine and spirits to be $12.89,[5] $8.34,[6] and $17.00[7] respectively. Using the percentage increase in price due to the proposed tax increases and the elasticity estimates just described we are able to calculate utilization figures under the new tax structure. In order to estimate FY 2007-2008 tax revenue, we multiply the new tax rates with the new utilization figures.

**Exhibit 2.**
**FY 2007-2008 Estimate of Additional**
**Revenue from Beer, Wine and Spirit Tax Increases**

| | Current Tax rate | FY 2006-2007 Tax Collections | Implied Utilization w/o tax increase | Price Elasticity of Demand for Alcohol | New Tax Rate | Average Price Before the New Tax Rate | New Utilization | Proposed FY 2007-2008 tax revenue | FY 2007-2008 Additional Revenue from Tax Increase |
|---|---|---|---|---|---|---|---|---|---|
| **Beer**[a] | $0.08 | $8,742,155 | 109,276,938 | -0.30 | $0.26 | $12.89 | $108,615,681 | $28,240,077 | $19,497,922 |
| **Wine** | $0.07 | $3,793,661 | 51,755,266 | -1 .00 | $0.66 | $8.34 | $47,658,447 | $31,454,575 | $27,660,914 |
| **Spirits** | $0.06 | $21,297,741 | 35,343,082 | -1.50 | $5.63 | $17.00 | $17,785,886 | $100,134,539 | $78,836,798 |
| **Total** | | **$33,833,557** | | | | | | **$159,829,191** | **$125,995,634** |

[a] Includes hard cider.
Source: Lewin Estimates.

Total tax revenue for FY 2007-2008 is estimated to be $159.8 million. Since we did not assume any new utilization (i.e. the utilization would have been the same in FY 2007-2008 if not for the tax increase), we estimate the additional tax revenue from the new taxes as the difference between the FY 2007-2008 and FY 2006-2007 amounts. This estimate is $126.0 million.

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4 Chaloupka, F.J., et al. 2002. The Effects of Price on Alcohol Consumption and Alcohol-Related Problems. Alcohol Reseach and Health, 26(1): 22-34. The elasticity estimates are actually based upon a meta-analysis of economic studies on alcohol demand: Leung, S.F. and Phelps, C.E. *"My Kingdom for a Drink…?" A Review of Demand for Alcoholic Beverages*. InHilton, M.E. and Bloss, G., eds. *Economics and the Prevention of Alcohol-Related Problems*. NIAAA Research Monograph No. 25, NIH Pub. No 93-3513.

5 This estimate for beer is based upon the national average price for one gallon of Corona as reported by the American Water Works Association. Available as of July 9, 2007 at http://www.awwa.org/Advocacy/news/info/PricePerGallon.

6 We used two reports to get data on average prices for wine in Colorado. (1) Thilmany, D. et al. May 2006. *The Economic Contribution of the Colorado Wine Industry*. Cooperative Extension, Colorado State University, Department of Agricultural and Resource Economics: Fort Collins, CO. Available as of July 11, 2007 at http://dare.colostate.edu/csuagecon/extension/docs/impactanalysis/edr06-08.pdf. (2) Colorado Wine Statistics. November 2, 2006. *Colorado Wine Production and Market Share.* Available as of July 11, 2007 at http://www.coloradowine.com/pdf/COWineStats.pdf.

7 The estimate of the average price for one liter of liquor is based upon best guesses by the analysts.

**Nutrition Tax**

In order to estimate possible revenue obtained from nutrition taxes, we estimated a range of impacts for taxes on carbonated soft drinks and on snack foods. At the bottom end of the range we analyzed a 2.0 percent tax and at the top a 5.0 percent tax. These are the magnitudes for nutrition taxes proposed by one of the authors.

***Carbonated Soft Drinks***

***Exhibit 3*** displays our results for taxes on carbonated soft drinks (CFDs). We first estimate FY 2007-2008 per household expenditures for CSDs. We base this estimate on 2004 and 2005 estimates of the total national retail value of CSDs ($65.9 billion and $68.1 billion respectively)[8] divided by the corresponding total estimated number of US households (112.0 million and 113.1 million respectively).[9] This division gives us per household estimates for 2004 ($588) and 2005 ($602) which we trend forward using the percent change from these two years. The estimate of per household CSD expenditures is $630 for FY 2007-2008.

**Exhibit 3.**
**FY 2007-2008 Estimate of Additional**
**Revenue from Tax on Carbonated Soft Drinks**

| Per Household CSD Expenditures | Households in Colorado | Total CSD spending | Tax Elasticity of Spending | Revenue from 2% Tax | Revenue from 5% Tax |
|---|---|---|---|---|---|
| $630 | 1,990,000 | $1,253,262,407 | 0.5 | ***$12,532,624*** | ***$31,331,560*** |

Source: Lewin Estimates

We also estimate the total number of households in Colorado using data from the Current Population Survey and our Health Benefit Simulation Model. We multiply the total number of households by per household CSD expenditures to get a total of $1.3 billion in CSD spending for the State. According to a study by Tefft, a one percent tax on the price of soda will lead to revenue of 0.5 percent. [10] Using this result, we estimate revenue from a 2.0 percent tax to be $12.5 million and a 5.0 percent tax to be $31.3 million.

8 Beverage Digest. March 8, 2006. Special Issue: All Channel Carbonated Soft Drink Performance in 2005, Vol 48(7). Available as of July 11, 2007 at http://www.beverage-digest.com/pdf/top-10_2006.pdf.

9 US Census. *Statistical Abstracts of the United States*. http://www.census.gov/prod/2006pubs/07statab/pop.pdf

10 Teft. NW. March 2006, DRAFT, *The Effects of a "Snack Tax: on Household Soft Drink Expenditure.*

### *Salty Snack Foods*

We also estimated the impact of a 2.0 percent and 5.0 percent tax on certain salty snack foods; potato chips, pretzels, cheese puffs, microwave popcorn, and nuts (packaged in bulk). ***Exhibit 4*** displays our results.

We used data form the 1999 AC Neilsen Homescan Panel to estimate a per pound household expenditure for salty snack foods.[11] We project the 1999 figure to FY 2007-2008 using the Bureau of Labor Statistics Consumer Price Index for food and beverages. This amounts to $2.93. According to the 1999 AC Neilsen data, the average number of pounds of salty snack foods purchased by a household was 31.810 lbs. We assume this would be the same in FY 2007-2008 before any tax increases.

**Exhibit 4.**
**FY 2007-2008 Estimate of Additional**
**Revenue from Tax on Salty Snack Foods**

| Average Amount of Household Expenditures per pound | Average Pounds Per Household before tax | Price Elasticity of Demand | Average Pounds Per Household with 2% Tax | Revenue from 2% Tax | Average Pounds Per Household with 5% Tax | Revenue from 5% Tax |
|---|---|---|---|---|---|---|
| $2.93 | 31.810 | -0.45 | 31.524 | ***$3,671,906*** | 31.094 | ***$9,179,764*** |

Source: Lewin Estimates

We use a price elasticity of demand for snacks of -0.45 to account for the offset in consumption due to the increase in price.[12] This leads to slight decreases in the average household consumption of salty snack foods to 31.524 lbs and 31.094 lbs under the 2 percent and 5 percent tax scenarios respectively. The corresponding revenues are $3.7 million and $9.2 million.

## The Federal 340B Drug Pricing Program

The federal 340b Drug Pricing Program provides access to reduced price prescription drugs to facilities certified by the Department of Health and Human Services (HHS) as “covered entities,” that serve the nation’s indigent care population. Covered entities include:

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[11] This data was reported in: Kuchler et al. August 2004. Taxing Snack Foods: What to Expect for Diet and Tax Revenues. *Agriculture Information Bulletin*, No 747-08

[12] Kuchler et al. August 2004. Taxing Snack Foods: What to Expect for Diet and Tax Revenues. *Agriculture Information Bulletin*, No 747-08. We average the low (-0.2) and high (-0.7) elasticity estimates reported.

- Certain FQHCs
- Consolidated Health Centers
- AIDS Drug Assistance Programs
- Tuberculosis, Black Lung, Family Planning, and Sexually Transmitted Disease Clinics
- Migrant Health Centers
- Homeless Clinics
- Healthy Schools/Healthy Communities
- Health Centers for Residents of Public Housing
- Office of Tribal Programs or urban Indian organizations

This program is administered by the Office of Pharmacy Affairs (OPA) of the Health Resources and Services Administration (HRSA), under HHS. According to the OPA website, there are currently 192 covered entities in the state of Colorado.[13]

It should be noted that there have been multiple legislative efforts to utilize prescription drug discounts available through the 340B program in order to maximize state budget savings.[14] These efforts have not, as of yet, resulted in enacted legislation.

Due to the restrictions in its application, estimated State savings for the 340B programs have been fairly modest. According to figures reported by the National Conference of State Legislatures, annual savings of approximately $3 million have been achieved by Oregon and Rhode Island.[15]

At this time, due to the modest savings experienced in other states, the fact that Colorado already has some 340B covered entities, and that recent legislative attempts to enhance 340B use have not been implemented, we do not estimate any additional savings for 340B maximization.

**Preferred Drug List**

Many States have been using Preferred Drug Lists (PDLs) to help contain Medicaid prescription drug expenses. PDLs are generally defined as a formal published list of preferred drugs that are selected for their efficacy, safety, cost-effectiveness, and documented scientific evidence.[16] States vary in how they implement there PDLs. Typically they require some sort of prior authorization from the prescribing clinician for drugs that are not on the PDL. The goal is to

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13 Office of Pharmacy Affairs, Health Resources and Services Administration. *Covered Entity Data Extract*. Available as of July 12, 2007 at http://opanet.hrsa.gov/opa/CE/CEExtract.aspx.

14 National Conference of State Legislatures. July 6, 2007. *State and the 340B Drug Pricing Program*. Available as of July 12, 2007 at: http://www.ncsl.org/programs/health/drug340b.htm.

15 National Conference of State Legislatures. May 14, 2007. *An "Oldie but Goodie": The 340B Program*. http://www.ncsl.org/programs/health/shn/2007/sn491b.htm

16 Colorado Health Institute. March 2005. Medicaid Preferred Drug Lists: A Review of Three States. Available as of July 13, 2007 at: http://www.coloradohealthinstitute.org/Documents/Medicaid_PDLs.pdf.

create a market shift towards more clinically effective and cost efficient drugs, which could lead to significant savings.

Colorado is beginning to use Preferred Drug Lists in FY 2007-2008. According the Governor's Executive Order D 004 07, a Preferred Drug List will be established by the Department of Health Care Policy and Financing (DHCPF) during FY 2007-2008.[17] The Joint Budget Committee has developed estimates for the impact of a PDL on Medicaid expenditures assuming an implementation date of January 1, 2008.[18] The PDL will be used for Colorado Medicaid prescription drugs purchased through Medicaid's Medical Services Premiums program beginning on January 1, 2008. According to DHCPF staff, the impact of the PDL is already incorporated in the appropriation estimates for FY 2007-2008. Therefore, it is already incorporated into our baseline estimates.

Given that Colorado already plans to use a Medicaid PDL and the savings estimate has already been incorporated into the budget appropriations used in our baseline figures, at this time we do not make any additional adjustments for PDL savings.

**Medicaid Managed Care**

Currently, the Colorado Medicaid managed care market share is relatively low and has been declining. Approximately half of Medicaid caseload was enrolled in managed care as of July 2002. As of July April 2006, Medicaid managed care penetration was below 20 percent.[19] Problems with financial solvency have been cited as reasons for managed care organizations (MCOs) dropping out of the Colorado Medicaid program.

The managed care per capita payment rates are currently set at 95 percent of the fee-for-service (FFS) per capita rate. The Department of Health Care Policy and Financing (DHCPF) provided an estimated impact on MCO payments and market share assuming that the payment equals 100 percent of the FFS payment rate plus additional payments for administration expenses.[20] Using the DHCPF assumptions for increased managed care payments and the subsequent increase in managed care market share, we estimate that there would be $47.8 million in added Medicaid costs.

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17 Office of Governer Bill Ritter Jr. January 31, 2007 Press Release. Available as of July 13, 2007 at http://www.colorado.gov/governor/press/january07/drug-list.html.

18 Melodie Beck, Joint Budget Committee, March 8, 2007. *Fiscal Year 2007-2008 Figure Setting (medical Service Premiums, Indigent Care program, Other Medical Services, and Selected Executive Director's Office Line Items).* Melodie Beck, Joint Budget Committee, March 8, 2007. *Fiscal Year 2007-2008 Figure Setting (Commission on Family Medicine).*

19 Melodie Beck. September 20, 2006. *Memorandum to JBC Members.*

20 Department of Health Care Policy and Financing. *Agenda and Responses, FY 07-08 Joint Budget Committee Hearing*. Attachment 5 and Attachment 6 provide details on the DHCPF assumptions and estimates.

***Exhibit 5*** details our estimates. We begin by identifying current FFS and MCO enrollment and per capita expenditures. We use total (including both FFS and MCO) appropriations and total caseload by eligibility category as reported in the Febuary 15th DHCPF FY-2007-2007 Budget Request (Exhibit E, page EE-1) in order to calculate per capita estimates. We subtract MCO enrollment from the total caseload estimates for each category in order to calculate FFS enrollment.[21] Given FFS and MCO enrollment and the fact that the MCO payment rate is set at 95 percent of the FFS rate, we can calculate the current FFS and MCO per capita costs.

In order to estimate FFS and MCO enrollment and per capita costs under the proposed payment rates, we use the DHCPF assumptions for MCO payment rate increases. This includes increasing the MCO base payment rate by approximately 5.26 percent in order to move the rate from 95 percent to 100 percent of the FFS payment rate (i.e. 1.0526 x 95% = 100%). There is also an additional payment increase of up to 5 percent to compensate MCOs for their administration costs. This administration adjustment varies by eligibility category from 2.78 percent to 5.0 percent as the total payment rate is not allowed to surpass the "actuarially sound" rate. Thus the total payment rate increase varies from 8.19 percent to 10.53 percent.

DHCPF also assumes that under these new rates, managed care penetration will be similar, with certain exceptions, to peak levels experienced around 2001 and 2002. These exceptions include an approximate 15 percent additional increase for the elderly population and a 5 percent additional increase for the disabled population due to the implementation of Medicare Special Needs Plans (SNPs). These plans may provide extra incentives for MCOs to market to dual eligible beneficiaries. Again these penetration rates vary by eligibility category. We assume that the combined enrollment remains the same (i.e. increasing MCO rates will not increase total Colorado Medicaid enrollment), so we apply the MCO penetration rates to the total Medicaid enrollment figures to estimate MCO enrollment. We also assume that the impact of the increased payment rate on enrollment is immediate.[22] We subtract MCO enrollment from total enrollment in order to estimate the FFS enrollment.

With the new FFS and MCO enrollment and per capita cost estimates we can estimate the change in Medicaid expenditures given the proposal to increase managed care market share though higher payment rates. As noted above, this amounts to $47.8 million ($2,178.0 million – $2,130.2 million = $47.8 million).

[21] MCO enrollment estimates are from Table 1 of Attachment 6 from: Department of Health Care Policy and Financing. *Agenda and Responses, FY 07-08 Joint Budget Committee Hearing*.

[22] This assumption may not reflect reality, as it is expected that it would take the market some time to adjust to the new payment rates, but is necessary of policy analysis implications.

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# Exhibit 5.
## FY 2007-2008 Estimated Impact of
## Increased Managed Care Payment and Penetration Rates

| | Adults 65 and Older (OAP-A) | Disabled Adults (OAP-B & AND/AB) | Categorically Eligible Low-Income Adults (AFDC-A) - includes Expansion Adults | Breast & Cervical Cancer Program | Eligible Children (AFDC-C/BC) | Foster Care | Baby Care Program-Adults | Non-Citizens | Partial Dual Eligibles | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| **SPENDING ESTIMATES FY 2007-2008** | | | | | | | | | | |
| **Total Spending - Before rate increase** | $721,004,374 | $694,180,741 | $197,630,151 | $6,732,907 | $334,222,727 | $57,896,077 | $43,481,512 | $57,658,943 | $17,349,392 | $2,130,156,823 |
| **Per Cap - MCO - Before rate increase** | $18,854 | $11,963 | $3,249 | $21,756 | $1,601 | $3,273 | $8,404 | $10,132 | $1,162 | |
| **Per Cap - FFS - Before rate increase** | $19,847 | $12,593 | $3,420 | $22,901 | $1,685 | $3,445 | $8,847 | $10,666 | $1,223 | |
| **Tot check - Before rate increase** | $721,004,374 | $694,180,741 | $197,630,151 | $6,732,907 | $334,222,727 | $57,896,077 | $43,481,512 | $57,658,943 | $17,349,392 | $2,130,156,823 |
| **Per Cap - MCO - After rate increase** | $20,763 | $13,222 | $3,591 | | $1,732 | $3,546 | $9,289 | | | |
| **MCO total - After rate increase** | $177,014,777 | $336,716,959 | $117,414,323 | | $201,970,326 | $5,994,298 | $12,155,195 | | | $851,265,878 |
| **FFS total - After rate increase** | $555,440,286 | $377,463,331 | $86,552,528 | $6,732,907 | $139,495,909 | $52,097,598 | $33,930,102 | $57,658,943 | $17,349,392 | $1,326,720,995 |
| **Total MCO & FFS - After rate increase** | $732,455,063 | $714,180,290 | $203,966,851 | $6,732,907 | $341,466,234 | $58,091,896 | $46,085,298 | $57,658,943 | $17,349,392 | $2,177,986,873 |
| **ASSUMPTIONS FOR INCREASED MCO RATES** | | | | | | | | | | |
| **Base rate increase** | 5.26% | 5.26% | 5.26% | | 5.26% | 5.26% | 5.26% | | | |
| **Admin increase** | 4.62% | 5.00% | 5.00% | | 2.78% | 2.94% | 5.00% | | | |
| **Total increase** | 10.13% | 10.53% | 10.53% | | 8.19% | 8.35% | 10.53% | | | |
| **ASSUMPTIONS FOR INCREASED MCO CASELOAD** | | | | | | | | | | |
| **Penetration Rates** | 23.35% | 45.93% | 56.37% | | 58.48% | 10.05% | 26.56% | | | |
| **CASE LOAD TOTALS - FY2007-2008** | | | | | | | | | | |
| **MCO totals - Before rate increase** | 3,662 | 6,298 | 4,360 | | 21,204 | 144 | 218 | | | 35,886 |
| **FFS total - Before rate increase** | 32,850 | 49,143 | 53,646 | 294 | 178,176 | 16,669 | 4,708 | 5,406 | 14,185 | 355,077 |
| **MCO and FFS total - Before rate increase** | 36,512 | 55,441 | 58,006 | 294 | 199,380 | 16,813 | 4,926 | 5,406 | 14,185 | 390,963 |
| **MCO - After rate increase** | 8,525 | 25,466 | 32,698 | 0 | 116,606 | 1,690 | 1,309 | 0 | 0 | 186,294 |
| **FFS - After rate increase** | 27,987 | 29,975 | 25,308 | 294 | 82,774 | 15,123 | 3,835 | 5,406 | 14,185 | 204,669 |
| **MCO and FFS total - After rate increase** | 36,512 | 55,441 | 58,006 | 294 | 199,380 | 16,813 | 5,144 | 5,406 | 14,185 | 390,963 |
| **MCO Penetration Rates - After Rate Increase** | 23% | 46% | 56% | 0% | 58% | 10% | 25% | 0% | 0% | 48% |

Source: Lewin Group Estimates based upon Department of Health Care Policy and Financing Assumptions.